

**Project title:** ResedaBraid: Reduction of damage to ceramic fibers in the braiding process chain

**Partners:** ResedaBinder KG, Institut für Textiltechnik der RWTH Aachen University

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### Mission Statement

Fibre composites made of ceramic fibres are being used more and more in the aviation industry. Various textile manufacturing processes are used in the manufacture of fibre composite components. Braiding is a near-net-shape, economical process for the production of chamfer composite components. Mechanical stresses in the braiding process (i.e. bending and friction) result in fibre damage and defects, which lead to an average of 10 % scrap. Broken filaments hinder the interweaving of the threads, reduce process stability and lower the product quality. If highly brittle oxide ceramic fibres are processed on a radial braiding machine, filament breakage results in a tensile strength loss of approx. 40 %.

### Solution

The main reason for the high fibre breakage is the inadequate protection provided by a coating not adapted for ceramic fibres. The aim of this research project is to develop a paraffin-based sizing and to apply it to the fiber by means of a sizing system that can be integrated into the winding process in a modular manner. Since the sizing is regularly burnt away before impregnation, no additional process step is added. The process induced tensile strength loss of 40 % is to be reduced by 30 %. The market potential for ceramic fibre composites is € 101 million per year, but the forecast annual growth rate is at least 15.2 % by 2020.

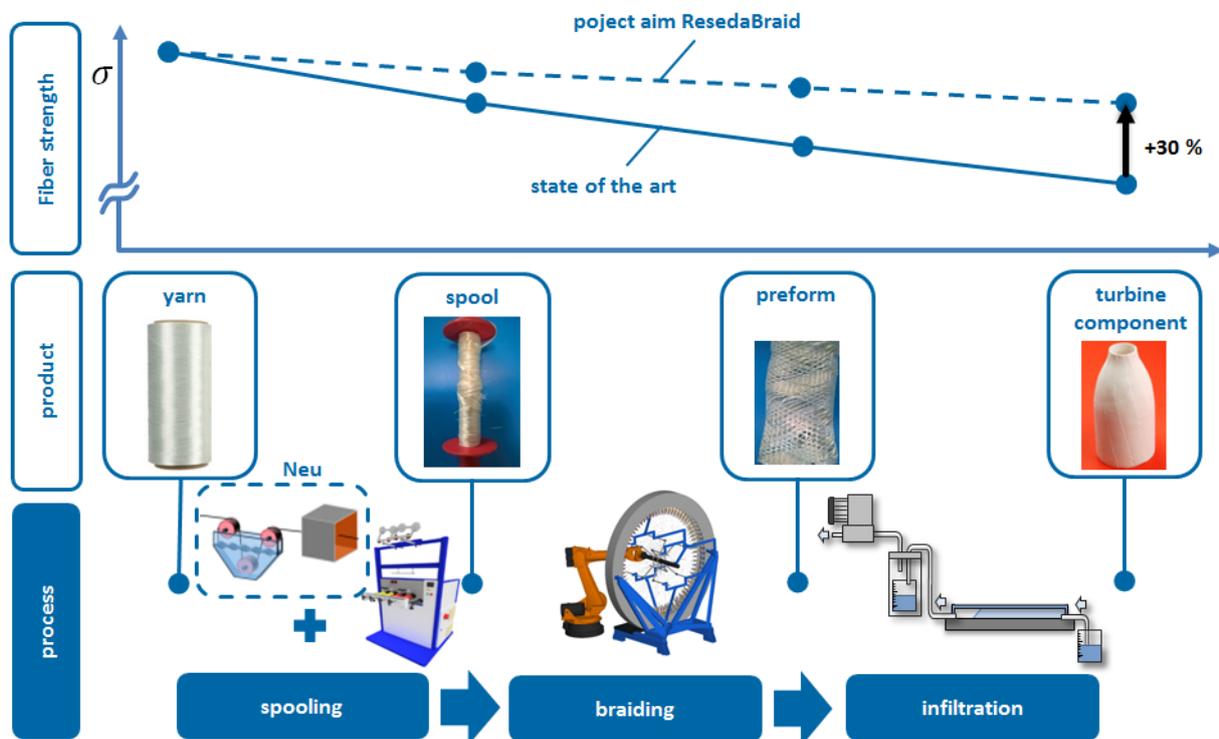


Figure 1.1: Central picture

### Acknowledgement

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